

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	("6026390").PN.	USPAT	OR	OFF	2005/09/28 15:36
L2	18483	(bottom smaller smallest least lower least) with increment	US-PGPUB; USPAT	OR	ON	2005/09/28 15:40
L3	59	2 and 718/1-108.ccls.	US-PGPUB; USPAT	OR	ON	2005/09/28 15:40
L4	40	@ad<="20010606" and 3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 15:40
S1	781	((meter indicator tracker monitor) with (usage utility utilization)) with resource	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 17:34
S2	880	((meter indicator tracker monitor) with (usage cost utility utilization)) with resource	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 16:51
S3	1260	((estimat\$5 predict\$4 calculat\$4) with (usage cost utility utilization)) with resource	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 16:52
S4	445	(respond\$3 allocat\$4 select\$4 choos\$3 pick\$3) with based with (current past prior) with (usage cost utilization utility)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 16:53
S5	2	((((meter indicator tracker monitor) with (usage cost utility utilization)) with resource) and (((estimat\$5 predict\$4 calculat\$4) with (usage cost utility utilization)) with resource) and ((respond\$3 allocat\$4 select\$4 choos\$3 pick\$3) with based with (current past prior) with (usage cost utilization utility)) and @ad<="20010606"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 16:59

S6	2	(((meter indicator tracker monitor) with (usage cost utility utilization)) with resource) and (((estimat\$5 predict\$4 calculat\$4) with (usage cost utility utilization)) with resource) and ((respond\$3 allocat\$4 select\$4 choos\$3 pick\$3) with based with (current past prior) with (usage cost utlization utility)) and @ad<="20010606") and (network client)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 17:32
S7	0	(((meter indicator tracker monitor) with (usage cost utility utilization)) with resource) and (((estimat\$5 predict\$4 calculat\$4) with (usage cost utility utilization)) with resource) and ((respond\$3 allocat\$4 select\$4 choos\$3 pick\$3) with based with (current past prior) with (usage cost utlization utility)) and @ad<="20010606") and (network client)) and request\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 17:33
S8	256459	(data information) with request\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 17:33
S9	141864	((data information) with request\$3) and (network client)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 17:34
S10	8373	(((data information) with request\$3) and (network client)) and ((cost usage utility utilization) with resource)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 17:34
S11	7973	(((data information) with request\$3) and (network client)) and ((cost usage utility utilization) with resource)) and communicat\$5	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 17:45
S12	23	compar\$5 with (increases increment) with (utility utilization usage cost) with resource	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 17:51
S13	18	@ad<="20010606" and (compar\$5 with (increases increment) with (utility utilization usage cost) with resource)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 15:40

S14	18	(@ad<="20010606" and (compar\$5 with (increases increment) with (utility utilization usage cost) with resource)) not cisco.as.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 17:51
S15	31	select\$3 with (increases increment) with (utility utilization usage cost) with resource	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 17:59
S16	20	(select\$3 with (increases increment) with (utility utilization usage cost) with resource) and @ad<="20010606"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 17:51
S17	20	((select\$3 with (increases increment) with (utility utilization usage cost) with resource) and @ad<="20010606") not cisco.as.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 17:51
S18	2	(select\$3 determin\$3 choos\$3) with (increases increment) with (utility utilization usage cost) with resource with (lowest lower least smallest)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 18:04
S19	1689	increas\$3 with cost with resource	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 18:04
S20	54	(increas\$3 with cost with resource) and (select\$3 with (lowest lower least smallest) with cost)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 18:05
S21	32	((increas\$3 with cost with resource) and (select\$3 with (lowest lower least smallest) with cost)) and @ad<="20010606"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/09 18:05
S22	20758415	@ad<="20010606"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/11/10 16:47
S51	237	((estimat\$3 potential predict\$3 calculat\$3 expected) near3 (usage utility)) with resource	US-PGPUB; USPAT	OR	ON	2005/04/14 15:08
S52	276199	(network client server) with (communicat\$6 transmit\$4 send\$3 receiv\$3)	US-PGPUB; USPAT	OR	ON	2005/04/14 14:46

S53	178	S51 and S52	US-PGPUB; USPAT	OR	ON	2005/04/14 14:47
S54	3261091	@ad<="20010228"	US-PGPUB; USPAT	OR	ON	2005/04/14 14:47
S55	55	S53 and S54	US-PGPUB; USPAT	OR	ON	2005/04/14 14:47
S56	6534959	@pd<="20000607"	US-PGPUB; USPAT	OR	ON	2005/04/14 14:48
S57	12	S53 and S56	US-PGPUB; USPAT	OR	ON	2005/04/14 14:59
S58	1	S57 and ((difference change delta) with (smaller smallest least lower least))	US-PGPUB; USPAT	OR	ON	2005/04/14 15:00
S59	24	((difference change delta) with (smaller smallest least lower least)) with (usage utility) with resource	US-PGPUB; USPAT	OR	ON	2005/09/28 15:39
S60	0	S51 and S59	US-PGPUB; USPAT	OR	ON	2005/04/14 15:01
S61	1	S56 and S59	US-PGPUB; USPAT	OR	ON	2005/04/14 15:01
S62	10	S54 and S59	US-PGPUB; USPAT	OR	ON	2005/04/14 15:01
S63	43	((difference change delta) with (smaller smallest least lower least)) with (usage utility cost) with resource	US-PGPUB; USPAT	OR	ON	2005/04/14 15:07
S64	19	((difference change delta) with (smaller smallest least lower least)) with (cost) with resource	US-PGPUB; USPAT	OR	ON	2005/04/14 15:07
S65	4	S64 and S56	US-PGPUB; USPAT	OR	ON	2005/04/14 15:08
S66	613	((estimat\$3 potential predict\$3 calculat\$3 expected) near3 (usage utility cost)) with resource	US-PGPUB; USPAT	OR	ON	2005/04/14 15:09
S67	48	((determin\$3 select\$3 pick\$3 choos\$3) near3 resource) with (cost utility utilization usage) with (increment\$3 chang\$3)	US-PGPUB; USPAT	OR	ON	2005/04/14 15:13
S68	13	S66 and S67	US-PGPUB; USPAT	OR	ON	2005/04/14 15:10
S69	3	S68 and S56	US-PGPUB; USPAT	OR	ON	2005/04/14 15:10
S70	49	((determin\$3 select\$3 pick\$3 choos\$3) near3 resource) with (cost utility utilization usage) with (increment\$3 chang\$3 marginal)	US-PGPUB; USPAT	OR	ON	2005/04/14 15:13

S71	3	((determin\$3 select\$3 pick\$3 choos\$3) near3 resource) with (cost utility utilization usage) with (marginal)	US-PGPUB; USPAT	OR	ON	2005/04/14 15:13
S72	1	S71 and S56	US-PGPUB; USPAT	OR	ON	2005/04/14 15:13
S73	277	((smaller smallest least lower least) near3 (increase change difference delta)) with (usage utility)	US-PGPUB; USPAT	OR	ON	2005/04/14 15:18
S74	108	S56 and S73	US-PGPUB; USPAT	OR	ON	2005/04/14 15:16
S75	13	S74 and 7\$/\$.ccls.	US-PGPUB; USPAT	OR	ON	2005/04/14 15:16
S76	1072	(cost usage utility) with resource with (increases)	US-PGPUB; USPAT	OR	ON	2005/04/14 15:20
S77	266	S76 and S56	US-PGPUB; USPAT	OR	ON	2005/04/14 15:19
S78	68	S52 and S77	US-PGPUB; USPAT	OR	ON	2005/04/14 15:19
S79	20	(cost usage utility) with resource with (increases) with request\$3	US-PGPUB; USPAT	OR	ON	2005/04/14 15:21
S80	1	S79 and S56	US-PGPUB; USPAT	OR	ON	2005/04/14 15:21
S81	12	(cost usage utility) with resource with (increases) with compar\$3	US-PGPUB; USPAT	OR	ON	2005/04/14 15:23
S82	2	S81 and S56	US-PGPUB; USPAT	OR	ON	2005/04/14 15:22
S83	23	(cost usage utility) with resource with (increases change delta difference) with compar\$3	US-PGPUB; USPAT	OR	ON	2005/04/14 15:23
S84	4	S83 and S56	US-PGPUB; USPAT	OR	ON	2005/04/14 15:23
S85	416	(cost usage utility) with resource with compar\$3	US-PGPUB; USPAT	OR	ON	2005/04/14 15:23
S86	101	S85 and S56	US-PGPUB; USPAT	OR	ON	2005/04/14 15:24
S87	6	S51 and S86	US-PGPUB; USPAT	OR	ON	2005/04/14 15:24
S88	1	(US-6070052-\$).did.	USPAT	OR	OFF	2005/04/14 15:35
S89	1	S88 and request\$3	USPAT	OR	OFF	2005/04/14 15:36
S90	1	S88 and (select\$3 transmit\$3 send\$3)	USPAT	OR	OFF	2005/04/14 15:53
S91	1	S88 and application	USPAT	OR	ON	2005/04/14 15:54
S92	0	S88 and program	USPAT	OR	ON	2005/04/14 15:57
S93	0	S88 and computer	USPAT	OR	ON	2005/04/14 15:58

S94	0	S88 and processor	USPAT	OR	ON	2005/04/14 16:00
S95	1	S88 and connect\$4	USPAT	OR	ON	2005/04/14 16:01
S96	1	(US-6070052-\$).did.	USPAT	OR	OFF	2005/04/14 20:18
S97	1	S96 and connect\$4	USPAT	OR	ON	2005/04/14 20:18
S98	1	S96 and bandwidth	USPAT	OR	ON	2005/04/14 20:19
S99	0	S96 and address	USPAT	OR	ON	2005/04/14 20:19
S10 0	2930	(cost near3 increas\$3) with (select\$3 allocat\$4)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 12:35
S10 1	45	(cost near3 increas\$3) with (select\$3 allocat\$4) with resource	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 12:53
S10 2	6534960	@pd<="20000607"	US-PGPUB; USPAT	OR	ON	2005/09/28 12:35
S10 3	13	S101 and S102	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 12:35
S10 4	96	(cost near3 increas\$3) with (select\$3 allocat\$4) with based	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 12:55
S10 5	15	S102 and S104	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 12:54
S10 6	939	(compar\$3 select\$3 choos\$3 determin\$3 allocat\$3) with (cost near3 (increment increas\$3 chang\$3 delta)) with (least less lower smaller)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:07
S10 7	288	S102 and S106	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:06

S108	1	S107 and 718/1-108.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:58
S109	32291	(compar\$3 select\$3 choos\$3 determin\$3 allocat\$3) with ((increment increas\$3 chang\$3 delta)) near3(least less lower smaller)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:17
S110	43	S109 and 718/1-108.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:07
S111	1575	(compar\$3 select\$3 choos\$3 determin\$3 allocat\$3) with increment near3(least less lower smaller smallest)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:22
S112	5	S111 and 718/1-108.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:18
S113	32318	increment with (least less lower smaller smallest)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:22
S114	77	((cost usage utilization resource) near2 increment) with (least less lower smaller smallest)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:55
S115	25	S114 and S102	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:23

S11 6	9	S115 and 7\$/\$.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:24
S11 7	32318	increment with (least less lower smaller smallest)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:41
S11 8	84	S117 and 718/1-108.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:42
S11 9	38	S118 and S102	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:40
S12 0	11847	increment near3 (least less lower smaller smallest)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:41
S12 1	28	S120 and 718/1-108.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:43
S12 2	9	S121 and S102	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:45
S12 3	19	S121 and @ad<="20010228"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:56



S12 4	9215	((cost usage utilization resource) near2 increase) with (least less lower smaller smallest)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:56
S12 5	16	S124 and 718/1-108.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:57
S12 6	2327	(compar\$3 evaluat\$3) near3 increment	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 13:58
S12 7	10	S126 and 718/1-108.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/28 15:36

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	385	(compare comparing compared comparison) near5 (first primary initial) near5 (increment increase) near5 (second another) near5 (increment increase)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2005/09/28 14:25
L2	26	1 and ("718"/\$ or g06f\$)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2005/09/28 14:25
L3	14	2 and @ad<"20010101"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2005/09/28 14:55
L4	214	1 and @ad<"20010101"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2005/09/28 16:00

Set	Items	Description
S1	16113373	COMPAR? OR CONTRAST? OR EVALUAT? OR DETERMIN? OR TRACK?
S2	14964039	MONITOR? OR ANALY? OR ASSESS? OR ASCERTAIN?
S3	7945432	FIRST? OR PRIMARY? OR ORIGINAL? OR 1ST OR INITIAL? OR LEAD- ING? OR LEADOFF?
S4	43571	INTRODUCTORY? OR NUMBER()ONE
S5	6851392	SECOND? OR ANOTHER? OR ADDITIONAL? OR EXTRA? OR TWOFOLD? OR NUMBER()TWO
S6	3356221	COST? OR PRICE? OR EXPENDITUR? OR USAGE? OR UTILIZATION? OR UTILISATION?
S7	2486495	AMOUNT? OR EXPENS? OR DISBURS? OR TOTAL()USED? OR RESOURC?
S8	8027359	INCREASE? OR INCREMENT? OR STEPUP? OR ADDITION? OR ADVANCE- MENT? OR STEPINCREASE?
S9	2589162	RAISE? OR RISE? OR INFLAT? OR ENLARG? OR SURGE? OR BOOST?
S10	4008604	SELECT? OR CHOOS? OR CHOICE? OR PICK?
S11	6466241	ALLOCAT? OR DECID? OR OPT OR OPTS OR OPTING OR ELECT?
S12	8455016	LOWEST? OR LOWER? OR LEAST? OR SMALL? OR MINIM? OR LITTL?
S13	258688	BOTTOM? OR ROCKBOTTOM? OR LOWERMOST? OR MOST() (LOW OR SMALL OR LITTLE)
S14	82260	CHEAP? OR (LESS OR LEAST OR FEWER) () (EXPENSIV? OR COSTLY? - OR MONEY? OR RESOURC?)
S15	2859411	ECONOMICAL? OR OPTIMIZ? OR OPTIMIS? OR CHEAPEST? OR MOST()- CHEAP? OR OPTIM?
S16	267412	COST?() (EFFECTIVE? OR EFFICIENT? OR SAVING?) OR MOST()INEX- PENS? OR MINIM?() (EXPENS? OR COST? ?)
S17	8450	(S1:S2 OR S10:S11) (5N)S3:S4 (5N)S8:S9 AND S5 (5N)S8:S9
S18	5492	S17 AND S1:S2 (7N)S8:S9
S19	71	S18 AND S10:S11 (5N)S12:S16
S20	27	S19 AND S6:S7
S21	71	S19:S20
S22	49	S21 AND PY<2002
S23	40	RD (unique items)
File	2:INSPEC	1969-2005/Sep W3 (c) 2005 Institution of Electrical Engineers
File	6:NTIS	1964-2005/Sep W3 (c) 2005 NTIS, Intl Cpyrght All Rights Res
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File	35:Dissertation Abs Online	1861-2005/Aug (c) 2005 ProQuest Info&Learning
File	65:Inside Conferences	1993-2005/Sep W4 (c) 2005 BLDSC all rts. reserv.
File	94:JICST-EPlus	1985-2005/Jul W5 (c)2005 Japan Science and Tech Corp(JST)
File	99:Wilson Appl. Sci & Tech Abs	1983-2005/Jul (c) 2005 The HW Wilson Co.
File	111:TGG Natl.Newspaper Index(SM)	1979-2005/Sep 27 (c) 2005 The Gale Group
File	144:Pascal	1973-2005/Sep W3 (c) 2005 INIST/CNRS
File	239:Mathsci	1940-2005/Nov (c) 2005 American Mathematical Society
File	256:TecInfoSource	82-2005/Oct (c) 2005 Info.Sources Inc

Non-PAT  
Lit

BIBLIOG.  
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# EFC Fast and Focus Search Notes

30/3,K/35 (Item 35 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
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013904142

WPI Acc No: 2001-388355/200141

Related WPI Acc No: 1997-132271; 1997-132850; 1997-132956; 1997-132957;  
1997-132958; 1997-132959; 1997-132960; 1997-132962; 1997-132963;  
1997-132964; 1997-132966; 1997-132967; 1997-132968; 1997-132969;  
1997-132970; 1997-132971; 1997-132972; 1997-132973; 1997-132974;  
1997-132975; 1997-132976; 1997-132977; 1997-132978; 1997-132979;  
1997-132980; 1997-132981; 1997-132982; 1997-132983; 2001-388356;  
2001-439983; 2001-439984; 2001-449821; 2001-449822; 2001-449823;  
2001-449824; 2001-578169; 2001-578170; 2002-048171; 2002-048172;  
2002-048173; 2002-054294; 2002-060896; 2002-074162; 2002-074163;  
2002-081642; 2002-081643; 2002-081644; 2002-081645; 2002-081646;  
2002-081647; 2002-120678; 2002-120679; 2002-129136; 2002-234951

XRFX Acc No: N01-285488

**Hierarchical resource management in asynchronous transfer mode network, involves allocating resource unit to a particular level entity, when actual resource utilization by specific level entity is lesser than maximum**

Patent Assignee: FUJITSU LTD (FUIT ); FUJITSU NETWORK COMMUNICATIONS INC (FUIT )

Inventor: BUBENIK R G; CALDARA S A; HAUSER S A; MANNING T A

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5889956	A	19990330	US 951498	P	19950719	200141 B
			US 96683349	A	19960718	

Priority Applications (No Type Date): US 951498 P 19950719; US 96683349 A 19960718

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
US 5889956	A	15	G06F-017/00	Provisional application US 951498

**Hierarchical resource management in asynchronous transfer mode network, involves allocating resource unit to a particular level entity, when actual resource utilization by specific level entity...**

Abstract (Basic):

... The method involves assigning a variable for an entity specifying maximum resource **allocation** for respective entity. A resource unit is **allocated** to 0-level entity, in response to request from a level 0 entity, when the actual resource utilization by the entities are less than maximum resource **allocation** specified by the respective variable for each of entities.

... Efficient flexible controlled use of resources is provided by ensuring that each entity has at **least** its respective **minimum** guaranteed **resource allocation**. Once the entity has been **allocated**, its respective minimum guaranteed **amount of resource**, **additional available resource** may be utilized up to the amount specified by respective first variable. Hence overall resource...

...Title Terms: **ALLOCATE** ;

International Patent Class (Main): **G06F-017/00**

30/3,K/45 (Item 45 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
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011526187 \*\*Image available\*\*  
WPI Acc No: 1997-502673/199746  
XRPX Acc No: N97-419059

Resource allocation manager for servers in database management computer system - re- allocates resources based on minimisation of maximum performance index, so that additional resources are added to server with largest performance index and resources are removed from server with smallest performance index

Patent Assignee: INT BUSINESS MACHINES CORP (IBMC )  
Inventor: CHUNG J; FERGUSON D F; NIKOLAOU C N; TENG J Z; WANG G W  
Number of Countries: 001 Number of Patents: 001  
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5675797	A	19971007	US 94248122	A	19940524	199746 B

Priority Applications (No Type Date): US 94248122 A 19940524

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
US 5675797	A	12	G06F-012/08	

Resource allocation manager for servers in database management computer system...

...re- allocates resources based on minimisation of maximum performance index, so that additional resources are added to server with largest performance index and resources are removed from server with smallest performance index

...Abstract (Basic): using size value minus number of resources to be exchanged, to provide performance indexes. A minimum server is determined by selecting from the first performance indexes, a minimum performance index. A second performance index is calculated for each server using its size value...

...A maximum server is determined by selecting from the second performance index, a maximum performance index. A third performance index is calculated...

...server is calculated using its size value. The size value of the maximum server is increased when the maximum value of the third and fourth performance indexes is greater than the...

...the third and fourth performance indexes is not greater than the maximum value of the minimum performance index and the maximum performance index. Resources are removed from each server having a decreased size value and resources are added to each server having an increased size value...

...ADVANTAGE - By expanding or contracting one or more server buffer pools, system performance is increased . Method is periodically woken up to dynamically adjust buffer pool sizes and number of resources allocated to buffer pools to minimise maximum performance index of buffer pools and balance performance index among all buffer pools...

...Title Terms: ALLOCATE ;

International Patent Class (Main): G06F-012/08

30/3,K/47 (Item 47 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
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011156088 \*\*Image available\*\*  
WPI Acc No: 1997-134012/199713  
XRPX Acc No: N97-110425

**Multi-tasking real-time processing method - stores index information of new task together with timeliness information, and selects and executes task with smallest timeliness information**

Patent Assignee: SIEMENS AG (SIEI )  
Inventor: XIAOYONG H; HE X  
Number of Countries: 016 Number of Patents: 009  
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
DE 19530483	A1	19970220	DE 195030483	A	19950818	199713 B
EP 762274	A1	19970312	EP 96113092	A	19960814	199715
CA 2183499	A	19970219	CA 2183499	A	19960816	199725
EP 762274	B1	19980610	EP 96113092	A	19960814	199827
BR 9603469	A	19980512	BR 963469	A	19960819	199828
DE 59600269	G	19980716	DE 96500269	A	19960814	199834
			EP 96113092	A	19960814	
<del>US 5635797</del>	A	20000815	US 96698729	A	19960816	200041
CN 1143778	A	19970226	CN 96109992	A	19960816	200062
CN 1099637	C	20030122	CN 96109992	A	19960816	200532

Priority Applications (No Type Date): DE 195030483 A 19950818

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 19530483	A1		13	G06F-009/46	
EP 762274	A1 G		15	G06F-009/46	
Designated States (Regional): AT BE CH DE FI FR GB IT LI NL PT SE					
CA 2183499	A			G06F-009/46	
EP 762274	B1 G			G06F-009/46	
Designated States (Regional): AT BE CH DE FI FR GB IT LI NL PT SE					
BR 9603469	A			G06F-009/46	
DE 59600269	G			G06F-009/46	Based on patent EP 762274
US 6105048	A			G06F-009/00	
CN 1143778	A			G06F-015/00	
CN 1099637	C			G06F-009/46	

... **stores index information of new task together with timeliness information, and selects and executes task with smallest timeliness information**

...Abstract (Basic): CPU). The t-bits of time information of all cells of the contention unit are **compared** to **determine** the task with the **smallest** time flow information...

...If the detected task does not coincide with the previously **determined** task, an interrupt (IRINW) is generated to the processor, to initiate the execution of the...

...USE/ADVANTAGE - Processor of real-time data processing system.

**Increases** processor efficiency using dynamic task prioritising without using **additional** processor. Enables implementation without high **cost**

...Title Terms: **SELECT** ;

International Patent Class (Main): G06F-009/00 ...

... G06F-009/46 ...

... G06F-015/00

International Patent Class (Additional): G06F-011/30

30/3,K/48 (Item 48 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
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011155039 \*\*Image available\*\*

WPI Acc No: 1997-132963/199712

Related WPI Acc No: 1997-132271; 1997-132850; 1997-132956; 1997-132957;  
1997-132958; 1997-132959; 1997-132960; 1997-132962; 1997-132964;  
1997-132966; 1997-132967; 1997-132968; 1997-132969; 1997-132970;  
1997-132971; 1997-132972; 1997-132973; 1997-132974; 1997-132975;  
1997-132976; 1997-132977; 1997-132978; 1997-132979; 1997-132980;  
1997-132981; 1997-132982; 1997-132983; 2001-388355; 2001-388356;  
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2002-081647; 2002-120678; 2002-120679; 2002-129136; 2002-234951

XRFX Acc No: N97-109739

**Hierarchical resource management for allocation of resource units to level zero entity - allowing requesting entity to use additional resource units above its allocation if these are available**

Patent Assignee: ASCOM NEXION INC (ASCO-N); FUJITSU LTD (FUJIT ); FUJITSU NETWORK COMMUNICATIONS INC (FUJIT )

Inventor: BUBENIK R G; CALDARA S A; HAUSER S A; MANNING T A

Number of Countries: 071 Number of Patents: 004

Patent Family:

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WO 9704549	A1	19970206	WO 96US11944	A	19960718	199712 B
AU 9665025	A	19970218	AU 9665025	A	19960718	199723
EP 839419	A2	19980506	EP 96924623	A	19960718	199822
			WO 96US11944	A	19960718	
JP 2001520817	W	20011030	WO 96US11944	A	19960718	200202
			JP 97506881	A	19960718	

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Patent No Kind Lan Pg Main IPC Filing Notes

WO 9704549 A1 E 39 H04L-003/16

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Designated States (Regional): AT BE CH DE DK EA ES FI FR GB GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG

AU 9665025 A H04L-005/00 Based on patent WO 9704549

EP 839419 A2 E H04L-012/00 Based on patent WO 9704549

Designated States (Regional): DE FR GB

JP 2001520817 W 33 H04L-012/28 Based on patent WO 9704549

**Hierarchical resource management for allocation of resource units to level zero entity...**

**...allowing requesting entity to use additional resource units above its allocation if these are available**

**...Abstract (Basic):** method of resource management involves assigning one variable for an entity specifying a maximum resource **allocation** for it. A request for a resource unit is received from a level zero entity. A resource unit is **allocated** in response to the request if actual resource use by the entity is less than a maximum specified by the first variable. The unit is also **allocated** if resource use of several entities is less than a total maximum resource **allocation** for each of



them. A second variable is assigned to the entity. The second variable specifies a **minimum allocation** for the entity to which it is assigned...

...a second variable is assigned for at least one entity. The second variable specifies a **minimum resource allocation** for the respective entity to which the second variable is assigned...

...Title Terms: **ALLOCATE** ;

International Patent Class (Additional): **G06F-009/46** ...

... **G06F-012/02**



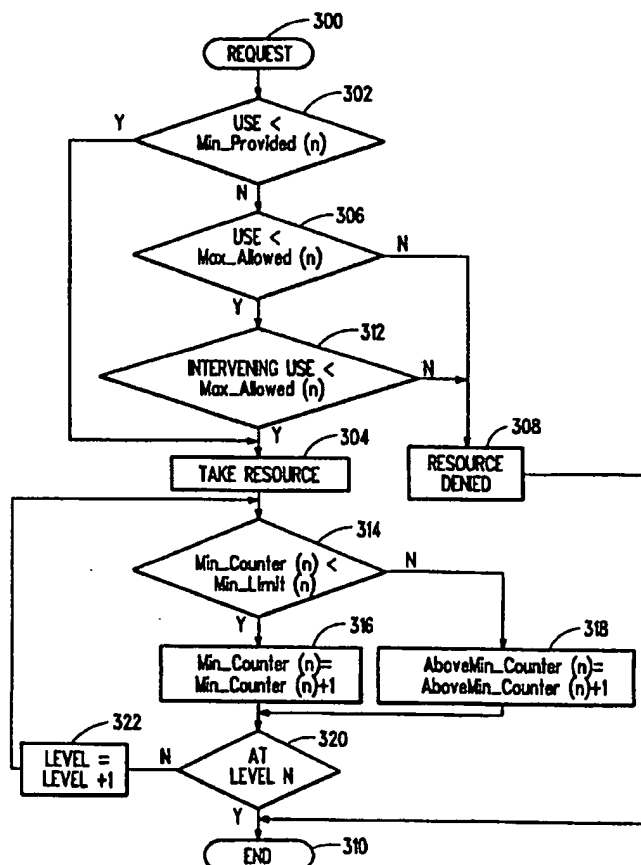
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>H04L 3/16</b>	<b>A1</b>	(11) International Publication Number: <b>WO 97/04549</b> (43) International Publication Date: 6 February 1997 (06.02.97)
<p>(21) International Application Number: PCT/US96/11944</p> <p>(22) International Filing Date: 18 July 1996 (18.07.96)</p> <p>(30) Priority Data: 60/001,498 19 July 1995 (19.07.95) US</p> <p>(71) Applicant (for all designated States except US): ASCOM NEXION INC. [US/US]; 289 Great Road, Acton, MA 01720 (US).</p> <p>(72) Inventors; and (75) Inventors/Applicants (for US only): HAUSER, Stephen, A. [US/US]; 106 Farms Drive, Burlington, MA 01803 (US). BUBENIK, Richard, G. [US/US]; 116 Willow Brook Drive, St. Louis, MO 63146 (US). CALDARA, Stephen, A. [US/US]; 220 Horsepond Road, Sudbury, MA 01776 (US). MANNING, Thomas, A. [US/US]; 26 Summer Street, Northboro, MA 01532 (US).</p> <p>(74) Agents: LEBOVICI, Victor, B. et al.; Weingarten, Schurgin, Gagnebin &amp; Hayes, Ten Post Office Square, Boston, MA 02109 (US).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published With international search report.</p>	

(54) Title: HIERARCHICAL RESOURCE MANAGEMENT

## (57) Abstract

A system for managing resources such as buffers and bandwidth which are allocated to competing entities (100, 102, 104) through two or more levels (LEVEL 0...LEVEL N) in a telecommunications network is disclosed. The system provides a tool to allocate resources for use by individual entities. Each entity may be assigned a Minimum-Guaranteed variable (302) and a Maximum-Allowed variable (306). When an entity requests resources the system determines if the entity is using its respective minimum guaranteed resource allocation which is specified by the Minimum-Guaranteed variable (302). If the entity is not using its respective minimum guaranteed resource allocation, the system allocates a resource unit to the requesting entity (304). The system also allows a requesting entity to use additional resource units above the resource allocation specified by the Minimum-Guaranteed variable, provided such resource units are available. If the entity has reached its respective minimum guaranteed resource allocation, but has not reached the respective maximum allowed resource allocation specified by the Maximum-Allowed variable (306) and no intervening level is using its respective maximum allowed resource allocation (312), then a resource unit is allocated to the requesting entity.



- 22 -

## CLAIMS

What is claimed is:

5 1. A method of hierarchical resource management for allocation of resource units to a level 0 entity through level 1 to level N entities including intervening levels, where N is greater than or equal to two, comprising:

10 assigning a first variable for at least one entity specifying a maximum resource allocation for the respective entity;

receiving a request from a level 0 entity for a resource unit; and

15 in response to a request from a level 0 entity for a resource unit, allocating said resource unit to the level 0 entity if:

a) actual resource utilization by said level 0 entity is less than the maximum resource allocation specified by the respective first variable; and

20 b) actual resource utilization by each of said level 1 through level N-1 entities is less than the maximum resource allocation specified by the respective first variable for each of said entities.

25 2. The method of hierarchical resource management of claim 1 wherein said method further includes the step of assigning a second variable for at least one entity, said second variable specifying a minimum resource allocation for the respective entity to which the second variable is assigned.

30 3. The method of hierarchical resource management of claim 2 wherein said allocating step further includes the step of inquiring whether actual resource utilization by the level 0 entity is less than the resource allocation specified by the respective second variable, and providing a resource unit  
35 to the level 0 entity if the actual resource utilization is less than the maximum resource allocation allowed by the

- 23 -

respective second variable.

4. The method of hierarchical resource management of claim 3 wherein said method further includes the step of setting the first and second variables such that the resource allocation specified by the second variable at a level X from 1 to at least N-1 is equal to or greater than a sum of all the resource allocations specified by the respective second variables at level X-1.

5. The method of hierarchical resource management of claim 3 wherein said method further includes the step of setting the first and second variables such that the resource allocation specified by the first variable at a level X is less than a sum of all the resource allocations specified by the respective first variables at level X-1.

6. The method of hierarchical resource management of claim 3 including a further step of tracking resource utilization by assigning at least one resource utilization counter to each entity.

7. The method of hierarchical resource management of claim 6 wherein said tracking step further includes the step of assigning first and second counters to each entity, the first counter indicating utilization of resource units in excess of zero and less than or equal to the resource allocation specified by the second variable, the second counter indicating utilization of resource units in excess of the resource allocation specified by the second variable.

8. The method of hierarchical resource management of claim 7 wherein said assigning step further includes a step of assigning a minimum limit variable specifying a minimum number of resource units available to the entity.